

Bull. Natn. Sci. Mus., Tokyo, Ser. A, **10** (1), March 22, 1984

## A New Triacanthodid Fish, *Triacanthodes intermedius*, from New Caledonia

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### Abstract

*Triacanthodes intermedius*, a new triacanthodid fish collected from New Caledonia, is described and figured from two specimens. This species is clearly separated from the other species of the genus by having the following characters: eye diameter larger than snout length; interorbital space wide and slightly convex; dorsal profile from mouth to origin of spiny dorsal fin convex; gill opening small, ending ventrally half-way down pectoral base; ventral end of pseudobranch reaching to, but not beyond, the lower edge of pectoral base; pelvis narrow.

Twelve specimens of *Triacanthodes* were collected by R. V. Vauban from New Caledonia at depths between 300 and 415 m on April 13, 1978, but only three of them were preserved because they were first identified on board as the common species *Triacanthodes ethiops* ALCOCK (see FOURMANOIR & RIVATON, 1979, for New Caledonia record). A later close examination at the National Science Museum, however, showed that two of the three specimens are different from *T. ethiops* or any other known members of the genus. These two are described and figured below as a new and fourth species of the genus.

### Methods

Counts and measurements follow the methods in TYLER (1968) and MATSUURA (1982). In the following description, the data of the paratype are given in parentheses when different from those of the holotype.

The following institutional abbreviations are used: ANSP, Academy of Natural Sciences of Philadelphia; BMNH, British Museum (Natural History); CAS, California Academy of Sciences; FUMT, Department of Fisheries, University Museum, University of Tokyo; HUMZ, Laboratory of Marine Zoology, Faculty of Fisheries, Hokkaido University; KSHS, Biological Laboratory, Kochi Senior High School;

MNHN, Muséum National d'Histoire Naturelle; NSMT-P, Department of Zoology, National Science Museum (Natural History), Tokyo; RMNH, Rijksmuseum van Natuurlijke Historie; RUSI, J. L. B. SMITH Institute of Ichthyology, Rhodes University; SAM, South African Museum; SU, Stanford University collection now at CAS; USNM, Division of Fishes, U.S. National Museum of Natural History; and ZUMT, Department of Zoology, University Museum, University of Tokyo.

*Triacanthodes intermedius* sp. nov.

(Figs. 1, 2)

*Holotype.* NSMT-P 22373, 71.5 mm in standard length (SL), Isle de Pines, New Caledonia, 360–415 m deep, April 13, 1978, R.V. *Vauban*.

*Paratype.* MNHN 1983–634, 70.3 mm SL, collected with the holotype.

*Diagnosis.* A member of the genus *Triacanthodes* with the following characters: eye diameter larger than snout length; interorbital region wide and slightly convex; dorsal profile from mouth to origin of spiny dorsal fin convex; gill opening small, ending ventrally half-way down pectoral base; ventral end of pseudobranch reaching to, but not beyond, the lower edge of pectoral base; pelvis narrow, its width 4.5–5.5% SL.

*Description.* D. VI–15; A. 13; P<sub>1</sub>. 14 (15); P<sub>2</sub>. I, 1 (2); C. i, 10, i; vertebrae 8 + 12 = 20; olfactory lamellae 11; pseudobranch lamellae 22.

Head length 39.4 (38.0)% SL, snout length 14.7 (13.4)% SL, eye diameter 18.6 (17.4)% SL, postorbital length 9.1 (9.0)% SL, interorbital width 13.4 (11.2)% SL, gill opening length 6.7% SL, snout to spiny dorsal fin 43.9 (43.7)% SL, body depth 41.1 (41.5)% SL, first dorsal spine length 31.9 (35.0)% SL, length of soft dorsal fin base 15.9 (16.5)% SL, soft dorsal fin height 12.2 (14.7)% SL, length of anal fin base 12.3 (12.2)% SL, anal fin height 9.4 (11.0)% SL, caudal fin length 22.3 (25.3)% SL, caudal peduncle depth 8.5 (9.1)% SL, caudal peduncle length 19.0 (16.5)% SL, pelvic spine length 27.6 (28.4)% SL, first pelvic ray length 8.3 (8.8)% SL, pelvic width 4.5 (5.5)% SL, pelvic length 26.6 (29.0)% SL, olfactory organ diameter 4.7 (3.6)% SL, distance between olfactory organs 5.4 (4.4)% SL.

Body compressed, rather deep, the depth slightly greater than head length. Interorbital space slightly convex. Eye diameter distinctly larger than snout length. Gill opening small, ending ventrally half-way down pectoral base. Pseudobranch rather short, its ventral end reaching the lower edge of pectoral base. Mouth small, terminal. Lips thin, mid-dorsal part of upper lip with an isolated patch of scales but lower one without scales. Both jaws with conical teeth in two series, the inner series reduced to two isolated teeth. Dorsal spines gradually decreasing in size posteriorly, the last spine minute and buried in skin. Proximal one-half to two-thirds of dorsal spines covered with spinulose scales which are enlarged on the lateral parts of the first to third dorsal spines. Few isolated spinulose scales scattered on basal part of spiny dorsal fin membrane. Ventral surface of pelvis covered with scales, distinctly tapering



Fig. 1. *Triacanthodes intermedius* sp. nov., holotype, NSMT-P 22373, 71.5 mm SL, New Caledonia.

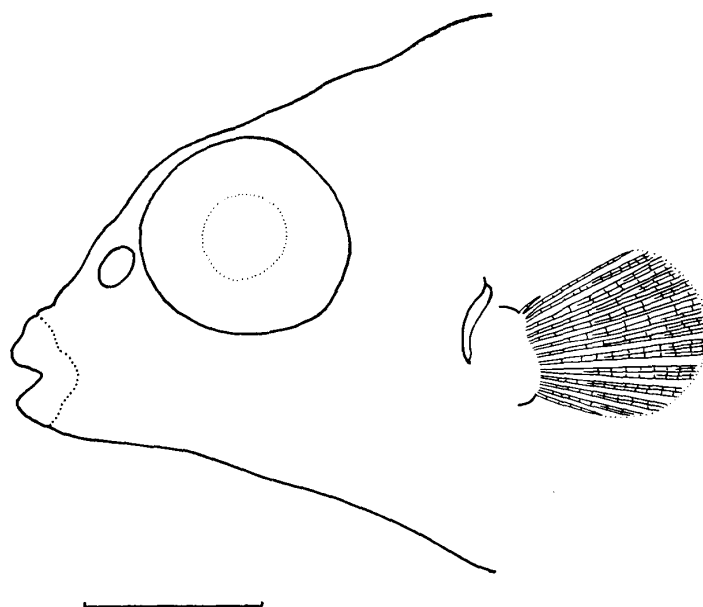


Fig. 2. Head of holotype of *Triacanthodes intermedius* sp. nov. Bar indicates 10 mm.

to a point posteriorly, much wider anteriorly between pelvic spines than posteriorly. Pelvic spines long and stout, their proximal two-thirds to three-fourths covered with spinulose scales which become enlarged dorsally and ventrally on the spines and form retrorse barbs. Anterior part of each scale with many narrow ridges forming

rings, posterior part with three or four small spines. Caudal fin round posteriorly. Pectoral fin fan-like in shape.

Color in alcohol: body yellowish-tan without markings; all fins pale; peritoneum black.

*Remarks.* The new species is similar to the members of the genera *Triacanthodes* and *Paratriacanthodes* in general appearance. *Triacanthodes* is distinguishable from *Paratriacanthodes* by the conical teeth in two series in both jaws (single series in *Paratriacanthodes*), and the pseudobranch ending ventrally at a level well below the lower edge of the pectoral base and its lamellae numerous (the pseudobranch of *Paratriacanthodes* reaching ventrally to a level between slightly to well above the lower edge of the pectoral base and its lamellae moderate to less in number) (TYLER, 1968).

The teeth of the new species are similar to those of the other species of *Triacanthodes*. On the other hand, the pseudobranch of the new species has a condition intermediate between *Triacanthodes* and *Paratriacanthodes*: the pseudobranch is moderate in length, reaching ventrally to the level of the lower edge of the pectoral base. Another distinctive character of the new species is the slender pelvis (its width 4.5–5.5% SL), which is narrower than that of other members of both genera, being closest in this respect to *P. herrei*, which has a relatively narrow pelvis (5.3–5.9% SL). However, it should be noted that the pelvis of another species of *Paratriacanthodes*, *retrospinis*, ranges from 10.6 to 13.1% SL in width, clearly wider than that of *Triacanthodes* (7.0–10.7% SL). Thus, it is difficult to use the width of the pelvis as an indicator of relationships, although there seems to be a trend of narrowing pelvic widths from the conditions in *Triacanthodes* to those found in specialized genera of triacanthodids (TYLER, 1968).

This particular mosaic of characters suggests that the new species may be a link phylogenetically connecting *Triacanthodes* with *Paratriacanthodes*, and that the latter is a junior synonym of the former. However, I think that it is premature to synonymize *Paratriacanthodes* with *Triacanthodes* because no osteological information is available for either the new species or for *P. herrei*. The new species should be retained in *Triacanthodes*, recognizing *Paratriacanthodes* as a distinct genus, until additional material of the new species and *P. herrei* allows us to resolve the problem.

The name *intermedius* refers to the intermediate conditions of the character states between *Triacanthodes* and *Paratriacanthodes*.

### Comparative Material

*Triacanthodes anomalus*: 36 specimens, 42.2–104.6 mm SL. Japan: HUMZ 49385, 49547–49548, 49550–49551, 49553–49554, 52188, 52299, 70493; KSHS 18172; RMNH 25399 (paralectotypes); ZUMT 33766–33767, 49596, 51063. China: ANSP 101253; 51288, 51668, 52235. Taiwan: SU 23538, 49435.

*Triacanthodes ethiops*: 20 specimens, 16.8–83.3 mm SL. Philippines: USNM 93488, 93491, 93493–93495. Indonesia: BMNH 1879.5.14.572. Africa: ANSP

103286; BMNH 1939.5.24: 1840–4; RUSI 12759, SAM 13085.

*Triacanthodes indicus*: 13 specimens, 69.6–117.0 mm SL. South-western Indian Ocean: NSMT-P 19160 (holotype), 19726–19727 (paratypes); HUMZ 73174–73177, 72403–73404, 73406, 73461, 81501 (paratypes).

*Paratriacanthodes herrei*: 2 specimens, 68.2–70.3 mm SL, USNM 93302 (paratypes).

*Paratriacanthodes retrospinis*: 5 specimens, 88.4–97.8 mm SL, FUMT-P 1862–1863.

### Acknowledgments

We wish to thank Dr. James C. TYLER of the Division of Biotic Systems and Resources, National Science Foundation, for critical reading of the manuscript. Our thanks go to the following persons for the loan of specimens under their care: Kunio AMAOKA, Laboratory of Marine Zoology, Faculty of Fisheries, Hokkaido University; Marinus BOESEMANN, Rijksmuseum van Natuurlijke Historie; the late James E. BÖHLKE, Department of Ichthyology, Academy of Natural Sciences of Philadelphia; William N. ESCHMEYER, Department of Ichthyology, California Academy of Sciences; Phillip C. HEEMSTRA, J. L. B. SMITH Institute of Ichthyology; Alexander P. HULLEY, South African Museum; Susan L. JEWETT, Division of Fishes, U.S. National Museum of Natural History; Takeshi YAMAKAWA, Kochi Senior High School; Kenji MOCHIZUKI, Department of Fisheries, University Museum, University of Tokyo; Yoshiaki TOMINAGA, Department of Zoology, University Museum, University of Tokyo; Alwyne C. WHEELER, British Museum (Natural History).

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